REMARKS

This is in response to the Office Action dated July 27, 2004. Claims 1 – 26 remain pending in the present application. The rejections set forth in the Office Action are respectfully traversed below.

Allowable Subject Matter

Claims 18 -23 were merely objected to as being dependent upon a rejected base claim, but are otherwise allowable. The indication of allowable subject matter was appreciated. By this Amendment, claim 18 was re-written into independent form to place claims 18-23 into condition for allowance.

Claim Objections

The objections to claims 3, 10, and 13 have been overcome by the corrections made above to these claims.

Rejections Under 35 U.S.C. §112

Claim 15 was rejected under 35 U.S.C. §112, second paragraph, regarding the feature of "the wafer by a distance not smaller than R." Claim 14 was amended to better recite this feature, and claim 15 was amended to define R as 5.

Rejections Under 35 U.S.C. §102

Claim 1 was rejected under 35 U.S.C. §102(b) over **Veneklasen et al.** (USP 6,392,333). Claim 1 was also rejected under 35 U.S.C. §102(b) over **Ohshima et al.** (USP 5,811,819). Claim 1 was also rejected under 35 U.S.C. §102(e) over **Takagi et al.** (USP 6,608,308). These rejections are now moot since claim 1 was amended to incorporate some of the features originally presented in claim 2. Claim 1 distinguishes over the prior art for the reasons explained below.

Rejections Under 35 U.S.C. §103

Claims 2 – 6 were rejected under 35 U.S.C. §103(a) over **Veneklasen** in view of **Takigawa et al.** (USP 4,363,955). Claims 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over **Veneklasen** in view of **Takigawa et al.** (USP 4,363,955) and further in view of **Schiller et al.** (USP 4,665,297). Claims 6, 7 and 9 were rejected under 35 U.S.C. §103(a) over **Oshima** in view of **Kin et al.** (USP 6,608,305) and further in view of **Dobisz et al.** (USP 6,586,158). Claims 10 and 12 were rejected under 35 U.S.C. §103(a) over **Takagi et al.** in view of **Otaka et al.** (USP 5,324,590). Claims 14 – 15 were rejected under 35 U.S.C. §103(a) over **Veneklasen** in view of **Koike et al.** (USP 4,426,577). Claims 16 – 17 and 25 – 26 were rejected under 35 U.S.C. §103(a) over **Takagi et al.** in view of **Otaka et al.** (USP 5,324,950) and further in view of **Baptist** (USP 6,465,792). These rejections are traversed below.

Claims 2-6 and Items 14-20 of the Office Action

As indicated in the Office Action, **Veneklasen** does not teach or suggest the claimed two-stage deflectors, and a further reference to **Takigawa** was made for allegedly teaching this missing feature. However, the two-stage deflectors of **Takigawa** are completely different from those of the claimed invention.

In **Takigawa**, the two-stage deflectors, or scanning deflection plates 8a and 8b, are provided for scanning the target 4 by electron beam. That is, the two-stage deflectors 8a and 8b are scanning deflectors which deflect electron beams coming along the optical axis to positions other than the optical axis for scanning the target 4. To this purpose, the two-stage deflectors 8a and 8b are provided near target 4, or far from the electron gun 1.

However, the two-stage deflectors of the present claimed invention are provided to deflect and direct an electron beam emitted from a cathode in a specific direction other than the optical axis so as to be in alignment with the optical axis. To this end, the two-stage deflectors are disposed near electron gun, i.e. between the condenser lens and the electron gun. Such deflection of electron beam is made to, e.g. deflect electron beam emitted in a specific crystal orientation allowing a higher level of electron beam out of the optical axis direction so as to align with the optical axis. The purpose, function and disposition of the two-stage deflectors of the present claimed invention are completely different from those of **Takigawa**.

Such distinguishing features were originally presented in claim 2 and are now recited in claim 1. In particular, claim 1 recites "an electro-optical column has a condenser lens, and two-stage deflectors disposed between said condenser lens and said electron gun, wherein said

two-stage deflectors deflect and direct an electron beam emitted from said cathode in a specific direction so as to be in alignment with an optical axis direction of said electron beam apparatus." Nothing in the cited prior art, either alone or in combination, teaches or suggests at least these features. Claims depending from amended claim 1 also distinguish over the prior art for at least these reasons.

Claim 5 and Item 21 of the Office Action

With regard to claim 5, the electron beams emitted in a particular direction from the electron gun is guided onto the sample, while the electron beams emitted in the directions other than the particular direction are absorbed into the anode. **Takigawa** does not, however, teach or suggest absorbing the electron beams by the anode at all. In **Takigawa**, as shown in Fig. 8, the cathode axis is slightly shifted from the optical axis and the weaker emission from a spot 1b is blocked by the aperture 2 to form a single beam spot.

Claim 6 and Item 22 of the Office Action

With regard to claim 6 and item 22 of the Office Action, claim 6 recites that the electron beam apparatus controls irradiation of the electron beam so that the electron beam is not irradiated onto the weak region (i.e. weak against dielectric breakdown). That is, the electron beam is irradiated exclusively onto the other regions. Claim 6 further recites that a region having a gate oxide film of a transistor formed thereon and a region having an electric connection with the region of gate oxide film are selected as the relatively weak region against the dielectric

breakdown. These features are not taught or suggested by **Veneklasen** at all. Although, the Office Action asserted that **Veneklasen** teach controlling irradiation of the electron beam so as not to irradiate undesirable region of a sample (col. 3 lines 41-59), there is no such description or suggestions anywhere in **Veneklasen**.

Claim 11 and Items 23-26 of the Office Action

With regard to items 23-26 of the Office Action, claim 11 depends on claim 10, and claim 10 defines that the two-stage of deflectors are operated to scan the sample, and the two-stage deflectors set a pivot point of deflection in such a location that minimizes a chromatic aberration due to the deflection in the proximity of the objective lens. By such arrangements, it is possible to reduce the diameter of the beam to obtain a higher beam current and an improved S/N ratio. Regarding these features, **Veneklasen** and **Shiller** ('297) are silent. In particular, **Shiller** relates to a high beam power electron gun and has nothing to do with the improvement of S/N ratio or reduction of the beam diameter.

Claims 6, 7, and 9, and Items 27-35 of the Office Action

With regard to items 27-35 of the Office Action, the Office Action asserted that **Ohshima** teach the claimed invention except for selectively irradiating a sample, **Kin** teach the desirability of selective irradiation, and it is allegedly obvious to combine **Kin** and **Ohshima** (items 28-30). However, as stated above, claim 6 defines that the electron beam apparatus controls the irradiation of the electron beam so that the electron beam is not irradiated onto the weak region

(i.e. weak against dielectric breakdown). The electron beam is irradiated exclusively onto the other regions.

Kin discloses selectively irradiating between the charging area and non-charging area of the sample. **Kin** does not teach or suggest selectively irradiating between weak region and other region. It is apparent that charging or non charging region is different from weak or non-weak region.

Dobisz teaches the relationship between the charge-up and dielectric breakdown. However, it does not teach or suggest selectively irradiating between weak region and other (non weak) region. The Office Action also noted that **Dobisz** teaches the sample including a gate oxide film of a are inspected via a SEM (item 33). However, **Dobisz** does not teach or suggest that the gate oxide film is a weak region against dielectric breakdown.

Further, with respect to the rejection of claim 8, the Office Action interpreted that the region weak against dielectric breakdown is the same as the charged area. However, it is apparent that they are not equivalent.

Claims 10 and 12, Items 36-42 of the Office Action

The examiner rejected these claims based on **Takagi** ('308) in view of **Okata** ('950). However, as stated above, claim 10 defines that the two-stage of deflectors is operated to scan the sample, and that the two-stage deflectors set a pivot point of deflection in such a location that minimizes a chromatic aberration due to the deflection in the proximity of the objective lens. On these features, the Office Action pointed out that **Takagi** discloses the optimizing means, i.e.

projection lens system sets a pivot point of deflection by two deflectors in such a location that minimizes a transverse chromatic aberration. However, **Takagi** does not teach or suggest two-stage deflectors. Instead, **Takagi** discloses reducing aberration by the use of the two lens. Accordingly, even if **Takagi** and **Okata** were to be combined for the sake of argument, the features of the claimed invention would still not be achieved.

Claims 14-15 and Items 43-45 of the Office Action

The Office Action rejected these claims based on **Veneklasen** and **Koike** ('577). Claim 14 defines the relationship "W+D/2 = R mm" between a working distance of the objective lens "w", a bore diameter of an electrode of the objective lens "D", and the an evaluation area of a wafer defined by the distance "R" from the periphery of the wafer. By maintaining this relationship, it is possible to evaluate the wafer without interference of the turbulence in electrostatic field caused by the peripheral edge, and thereby it is possible to evaluate the sample with high accuracy in the lower aberration condition. Neither **Veneklasen** nor **Koike** teach or suggest these features at all.

Claims 16-17 and Items 46-49 of the Office Action

The examiner rejected these claims based on **Takagi** in view of **Okata** and **Baptist** ('792). Claims 16 and 17 depend from amended claim 14 and distinguish over the prior art for at least the reasons provided above for claim 14 distinguishing over the prior art. None of **Takagi**, **Okada** and **Baptist** teaches or suggests the relationship recited in claim 14.

In addition, the Office Action noted that **Baptist** teaches electrodes made of insulating material with a metal coating used in an electrostatic lens system (col. 5 lines 36-49). However, the identified portion of **Baptist** does not disclose these features.

Claim 24 and Items 46-49 of the Office Action

Claim 24 includes a step of evaluating the processed wafers using an electron beam apparatus as defined in claim 6 and a step of assembling devices using the processed wafers. None of **Takagi**, **Okata** and **Baptist** discloses or suggests a device manufacturing method including at least this step.

For at least the reasons detailed above, the present claimed invention patentably distinguishes over the prior art. If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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